MEMORACK 180

Installation
Manual

ADB
Lighting Technologies

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Dimmer room ventilation

The MEMORACK 180 dimmer cabinet and MEMORACK 30 dimmer units are designed to operate at room temperatures between 5 °C and 35 °C, and relative humidity max. 90% non-condensing. Adequate ventilation of the dimmer room must be provided. Suggested dimmer room temperature: 20 °C to 25 °C.

Dissipation

The dissipation is a thermal load for the room ventilation system. The dimmers will dissipate less than 2% of the actually used electrical load.
Example: assume an installation with

- 900 kW of dimmers; e.g. five MEMORACK 180 in the same dimmer room
- in total 1000 kW of luminaires of various types
- the electrical supply can provide up to 400 kW; this limit is set by the main transformer or the main circuit-breaker for the dimmer installation.

In this example the real electrical load will never exceed 400 kW. The ventilation of the dimmer room should be designed for a dissipation of 2% of 400 kW, i.e. 8 kW.

Support surface for the cabinet

A drawing of the MEMORACK 180 dimmer cabinet is shown on the last page of this document.

Free height above the cabinet

Each dimmer unit (MEMORACK 30, MICRORACK 25) receives fresh air through apertures in its front panel. The cooling system of the MEMORACK 180 cabinet expels air through the ‘roof’ of the dimmer cabinet. Provide a free space of minimum 0.25 m above the MEMORACK 180 cabinet.

Dust cover

Each MEMORACK 180 cabinet is shipped with a large transparent polyethylene cover, to protect it against dust, plaster and other debris falling into the cabinet. It is recommended that this cover is left over the cabinet during the whole installation period and until final tests. During installation and cabling, cut openings in the plastic to allow air and cables into the cabinet. The plastic cover must be removed after installation, and before dimmer load tests are performed.

Supply connections

Supply cables

The use of cables with reduced-size Neutral is DANGEROUS and FORBIDDEN. The size of the Neutral conductor should be equal to, or larger, than the size of the phase conductors. The Neutral and the three phases should be under the same outer sleeve, in order to reduce unwanted interference with audio and video equipment. It is also recommended to use two supply cables in parallel, as these are easier to route and to bend into the cabinets.

Maximum supply current

MEMORACK 180 is designed for a maximum total load of 180 kW. The maximum admissible phase current is 270 A. The supply protection, which protects the MEMORACK 180 cabinet and its supply cable, should be selected accordingly.

Supply busbars

The three Phase busbars are labelled L1 (phase No. 1, phase R), L2 (phase No. 2, phase S) and L3 (phase No. 3, phase T). The Neutral busbar is labelled N and the colour code for the Neutral is blue, as per IEC Recommendation 446.
The Phase and Neutral busbars feature two holes each, suitable for size M10 bolts and nuts, for connection of one or two supply conductors. The conductors should be fitted with cable lugs.
The Protective Earth (PE) busbar features two holes suitable for size M8 bolts and nuts. Colour code: green/yellow.
A set of bolts, nuts and washers is included (4 x M10 + 1 x M8).
A separate bolt and nut (M12) for equipotential connections is provided at the bottom of the cabling compartment.

Load / output connections

The load (output) connections are grouped per MEMORACK 30 / MICRORACK 25.
For a MEMORACK - 12 x 3 kW :

- twelve three-level terminals
- suitable for cables up to 4 mm^2 (flexible) or 6 mm^2 (rigid)

For a MEMORACK - 6 x 5 kW :

- six times three terminals
- suitable for cables up to 10 mm^2 (rigid and flexible).

Numbering sequence: for each terminal strip, the numbering (1 to 12, or 1 to 6) starts at the top.

Cabling apertures

Cables can enter the cabinet from top and / or bottom. Both apertures are 9 cm x 56 cm, with a removable metal cover plate.

Colour Coding of Phase Cables

The following colours are used for the power cabling of the dimmers and the cable looms to the load terminals: grey for phase L1; black for phase L2; red for phase L3; blue for Neutral; yellow/ green for PE (earth).

Phase Distribution for MEMORACK 30

In MEMORACK 30 - 12 x 3 kW, and MICRORACK 25, the phases are distributed as follows:
- dimmers 1 - 4 on phase L1 (grey)
- dimmers 5 - 8 on phase L2 (black)
- dimmers 9 - 12 on phase L3 (red)

In MEMORACK 30 - 6 x 5 kW, the phases are distributed as follows:
- dimmers 1 and 2 on phase L1 (grey)
- dimmers 3 and 4 on phase L2 (black)
- dimmers 5 and 6 on phase L3 (red)

In MEMORACK 30 - 3 x 12 kW, the phases are distributed as follows:
- dimmer 1 on phase L1 (grey)
- dimmer 2 on phase L2 (black)
- dimmer 3 on phase L3 (red)

DMX Connection - Type of Cable

Use data cable with two twisted pairs + 1 conductor (can be from a third pair) + overall screen. Use data cable which is suitable for digital data transmission (EIA 485 / RS 485; 250 kBaud). The data signal must meet the DMX512/1990 specification, issued by the USITT (US Institute for Theatre Technologies). Do not use audio cable for DMX, as this has the wrong capacitance and impedance and WILL NOT reliably transmit DMX signals. (The DMX signal uses fairly high frequencies, well above 1000 kHz.)

DMX512 connections

Each MEMORACK 180 cabinet has one central DMX connection (IN and Out/Thru). DMX distribution to the MEMORACK 30 / MICRORACK 25 dimmer units is handled by factory-installed ribbon cabling inside the MEMORACK 180 cabinet. Connect the DMX cable to the printed circuit board mounted behind a small cover panel on the front, between the supply fuses and the top MEMORACK 30. You will find a label with pin numbering information on the inside of the small cover panel. Terminals: six terminals, labelled DMX IN (TB1), for incoming DMX; six terminals, labelled DMX OUT (TB2), for daisy-chaining to the next dimmer cabinet.

Pin numbering
Pin numbers follow the DMX512/1990 standard:
1 screen, and 0 V
2 data - (DMX)
3 data + (DMX)
4 data - (ADN, remote programming and feedback)
5 data + (ADN, remote programming and feedback)
For optimum EMC (Electro-Magnetic Compatibility) performance however, the wiring should be as follows:
1 0 Volt conductor (different from the screen)
2 data - (DMX)
3 data + (DMX)
4 data - (ADN, remote programming and feedback)
5 data + (ADN, remote programming and feedback)
6 screen in the DMX cable, and connection to chassis

All screens in all cables should be interconnected, and one end - or both ends - of this long screen should be connected to earth (chassis).

DMX and ADN Termination Resistors

Every DMX line should be terminated with a 120 Ohm resistor between pins 2 and 3 (data - and data +), on the last unit on the DMX network. In MEMORACK 180, a terminating resistor is conveniently included on the DMX connection pcb. The resistor is connected when the jumper TERM.LOAD / DMX TERM. is placed in the ON position. The termination is not connected when the jumper TERM.LOAD / DMX TERM. is removed or 'parked' on only one pin.

If your installation of dimmers completes the DMX network, i.e. the DMX network is not continued after the last MEMORACK 180, then remove or park the jumper for ALL cabinets EXCEPT the last cabinet, where the jumper should be installed.

If your installation of dimmers does not complete the network and additional items are connected after the MEMORACK 180 cabinets, then ALL jumpers should be removed or parked. In this case, a termination resistor should be placed on the output connector of the last DMX device on the DMX line such as a data booster, portable dimmer, colour changer, etc..

A second termination resistor should be installed on the second data pair, for the bidirectional Advanced Dimmer Network (ADN).

Max. 32 receivers per DMX line

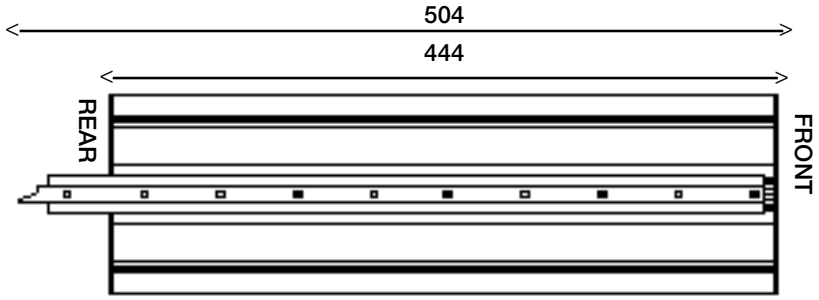
The EIA485/RS485 standard, and the DMX512 standard, define a maximum of 32 receivers on one DMX line.
Examples of receivers are: a MEMORACK 30, a MICRORACK 25, a EURORACK 60 wall-mount cabinet, a EURODIM 2 cabinet, a MEMOPACK portable dimmer, the input of a data booster, a colour scroller, a moving light. It is very easy to reach 32 receivers without being aware of this problem. The solution is to include DMX buffering to split the multiple receivers down into additional zones each buffered and isolated from the next.

Advanced Dimmer Network - ADN

MEMORACK, EURORACK and portable MEMOPACK dimmers use the second (spare) data pair in the DMX cable for bidirectional communication between ADB dimmers, and optionally with the NETBUS controller and a PC running the Dimmer Manager software. The rules applicable to DMX also apply to this ADN network.

How to Insert and Connect a MEMORACK 30 Dimmer Unit

Preliminary: mount two slides on each MEMORACK 30 or MICRORACK 25 dimmer unit. Mounting position: tip of the slide must point to the rear; longer side of the slide must be towards the bottom.



WARNING
Before you connect or disconnect a MEMORACK 30 / MICRORACK 25 dimmer unit, you MUST disconnect the mains supply of that unit. Set the crate protection fuse to 0/Off, or switch Off the main supply to the whole MEMORACK 180 dimmer cabinet.

- slide the two black telescopic rails out, until they latch
- slide the MR 30 on the two black telescopic rails until both latches click. Do not force !
- insert the supply connector (Harting-type) and tighten its two locking screws
- insert the two output connectors (AMP); they are labelled UP and DOWN
- now depress the two latches on the telescopic rails, and fully insert the MEMORACK 30 / MICRORACK 25
- fix the MR30 / MIR 25 in place with the four M6 (Metric 6) front panel screws

How to Remove a MEMORACK 30 Dimmer Unit

WARNING: before you connect or disconnect a MEMORACK 30, you MUST disconnect the power supply of that MEMORACK 30. Set the crate protection fuse to 0/Off, or switch Off the main supply to the whole MEMORACK 180 dimmer cabinet.

For the MEMORACK you wish to remove:

- set the control levels of its dimmers to Off/0% (lighting control desk)
- set the relevant supply fuses or supply mcb - on the upper part of cabinet front - to 0/Off
- remove the four M6 (Metric 6) screws at the front of the MR30 dimmer unit
- pull the MR30 out until the two latches click (see note)
- remove the two output connectors (AMP; labelled UP and DOWN)
- unscrew both locking screws of the supply connector, and remove the supply connector (Harting-type)

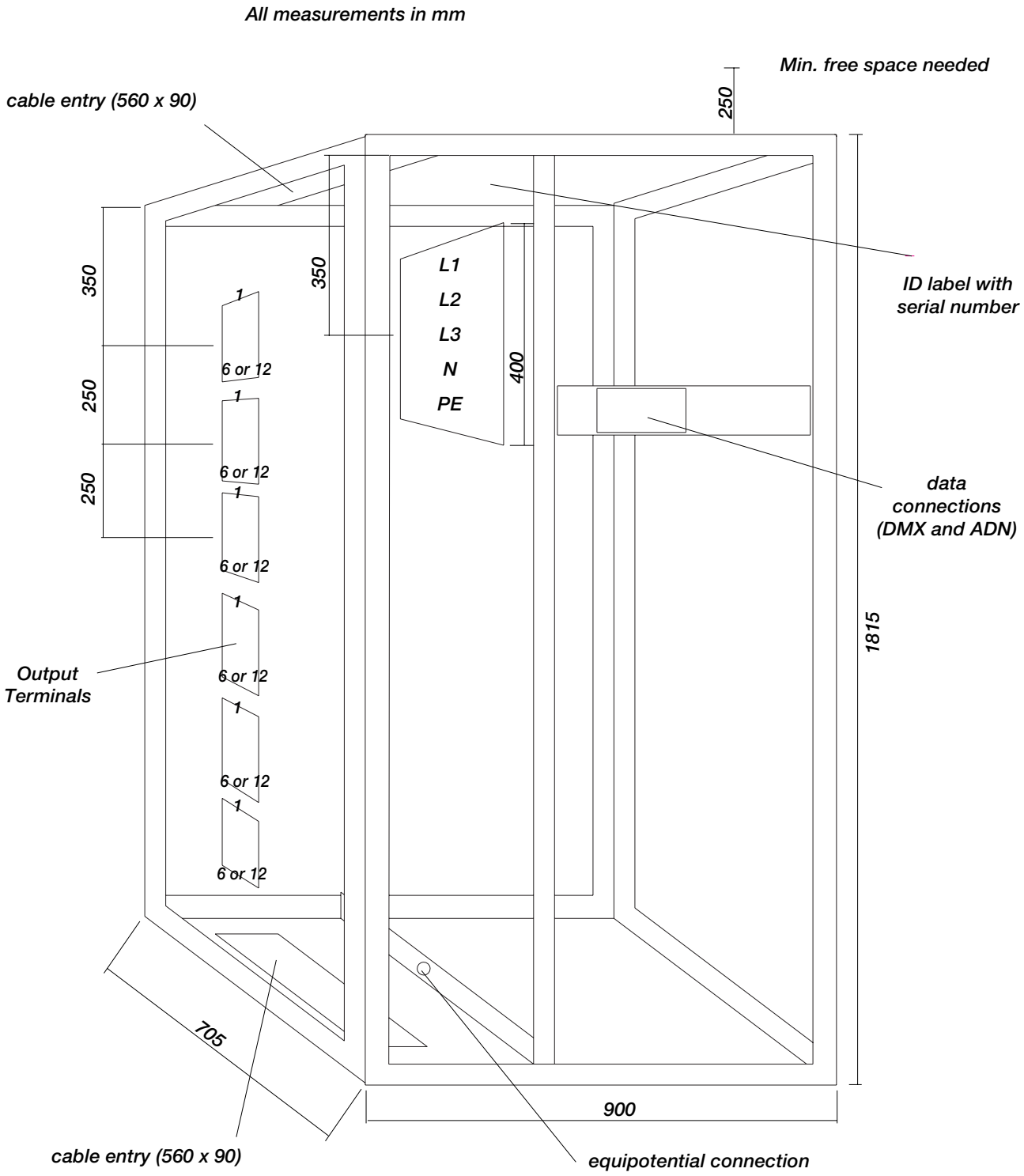
The MEMORACK 30 is now fully disconnected. To remove it, depress the two latches on the telescopic guiding rails.

Note for MR30 with DMX connector at the rear.
Once you start pulling out the MEMORACK 30, the DMX signal is disconnected for this MR30. This however does not disconnect DMX for the other MEMORACK 30.

How to program the MEMORACK or MICRORACK dimmers

For the programming of DMX addresses, dimmer laws, etc., and for the built-in Test functions, please refer to the MEMORACK or MICRORACK User Manuals. A comprehensive manual 'Programming Digital Dimmers and NETBUS' extensively covers the menus of MEMORACK, EURORACK, portable MEMOPACK and the NETBUS protable Remote Dimmer Controller.

MEMORACK 180



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